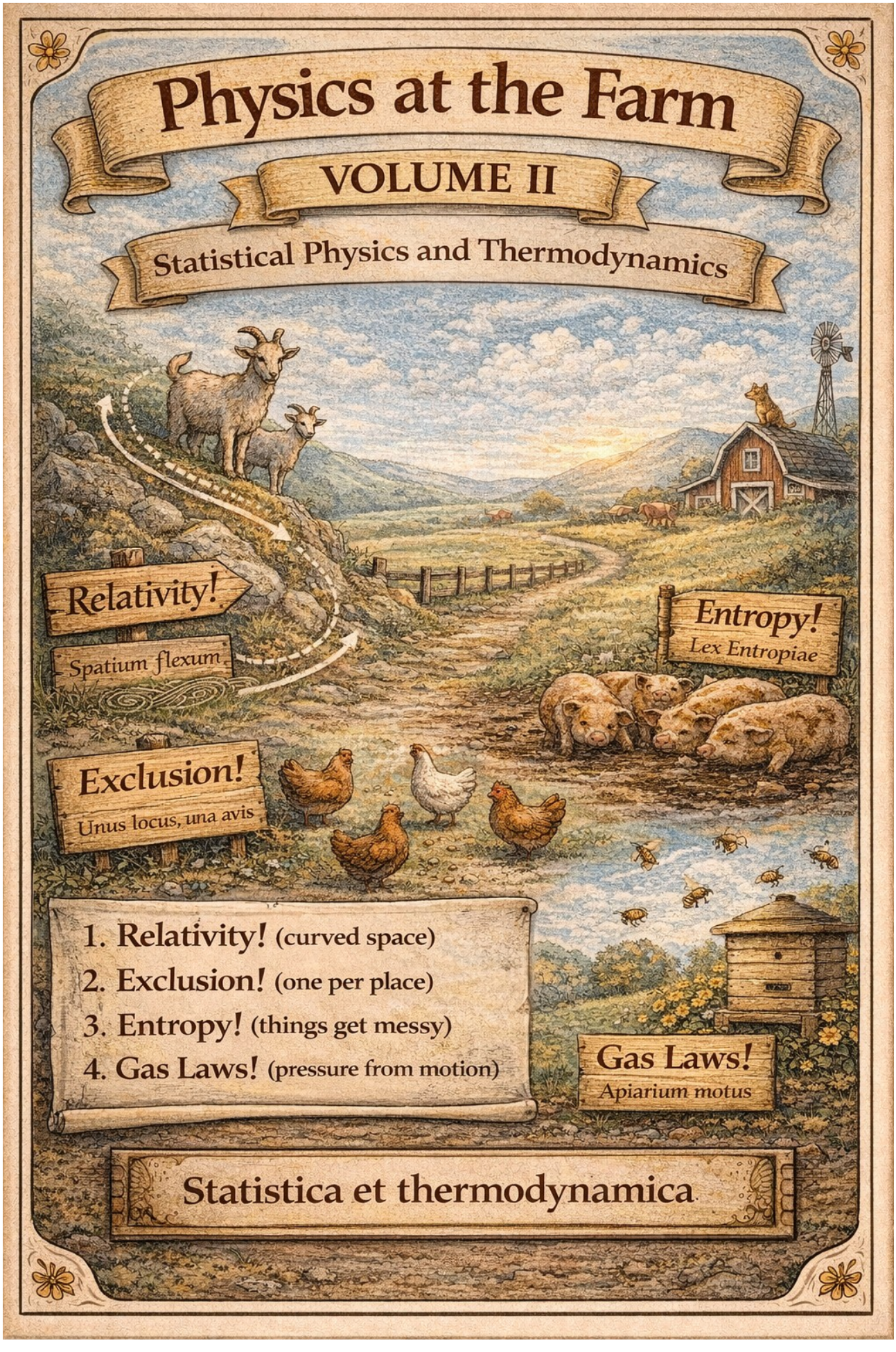
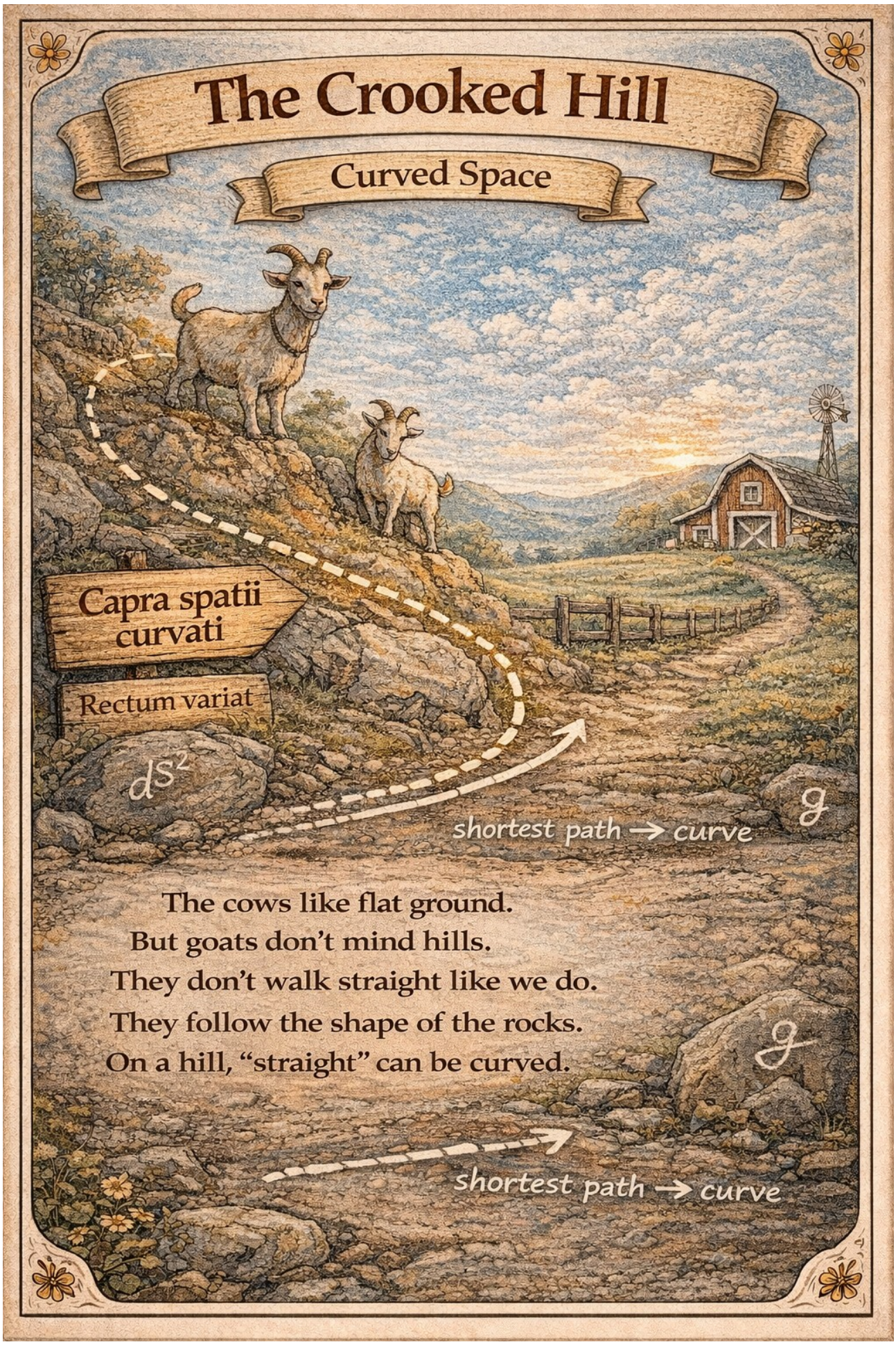
Physics at the Farm

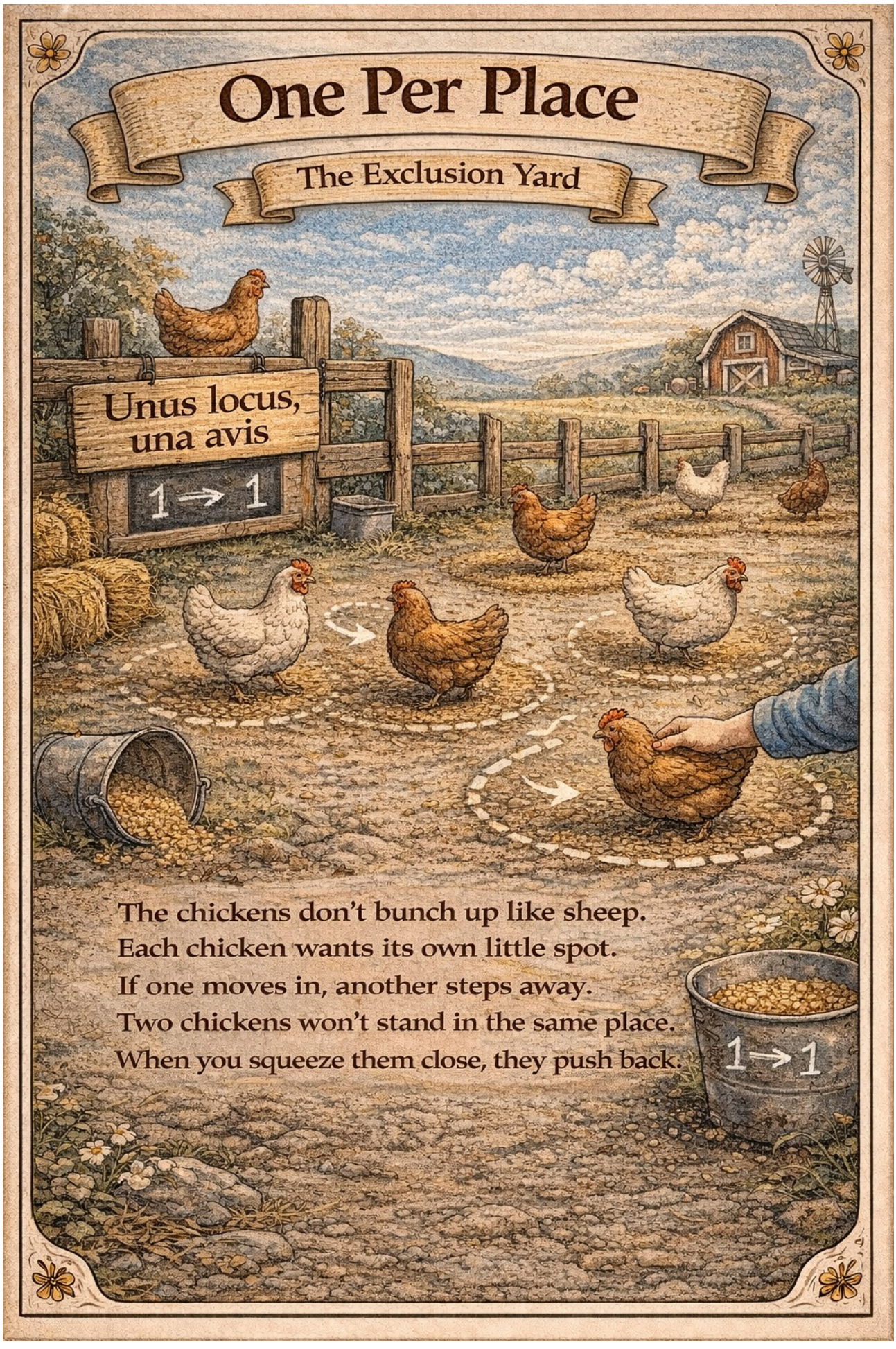
VOLUME II

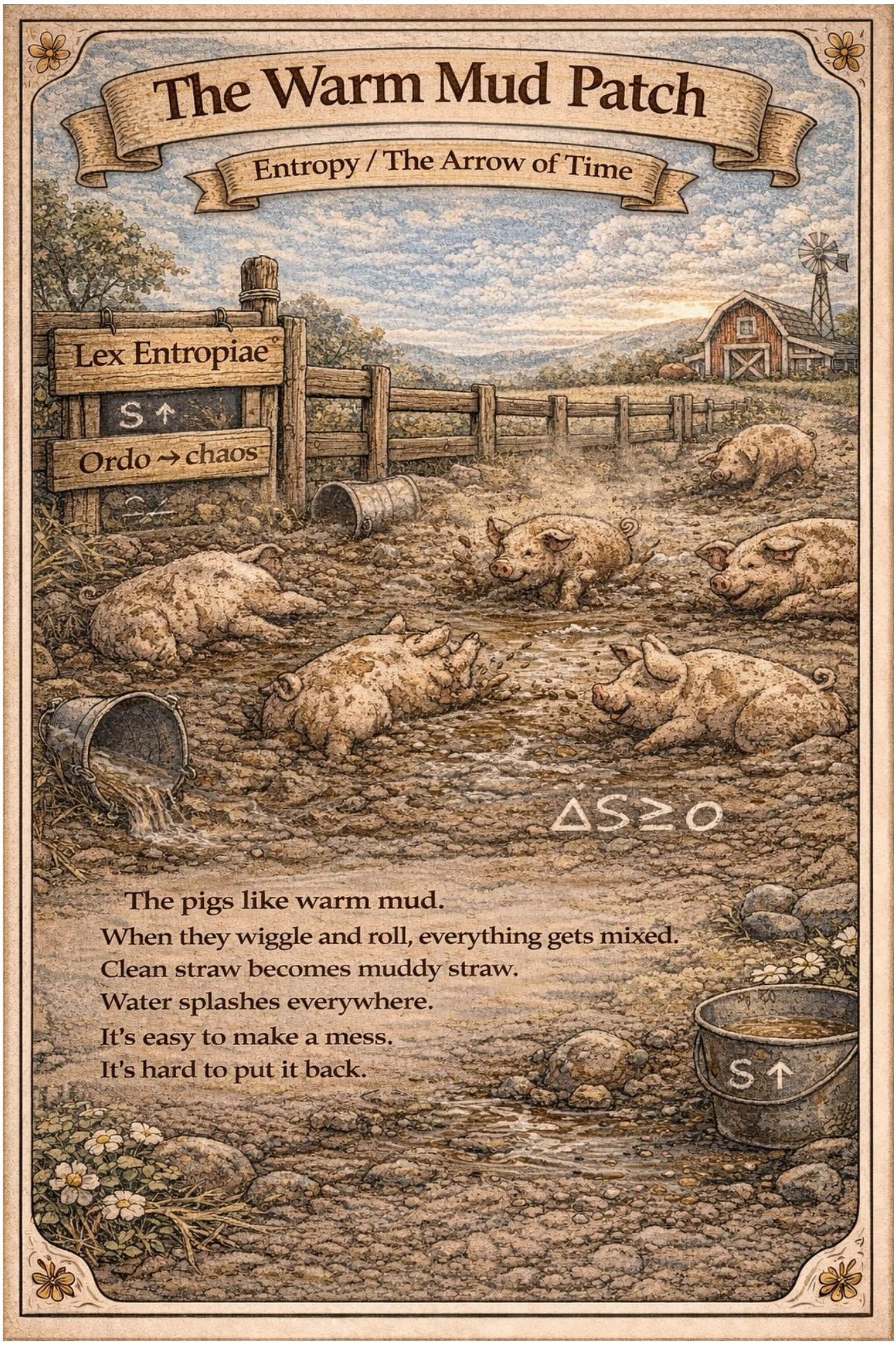
Statistical Physics and Thermodynamics



Statistica et thermodynamica


The Crooked Hill
Curved Space
Capra spatii curvati
Rectum variat
dS^2
shortest path → curve
g
The cows like flat ground.
But goats don't mind hills.
They don't walk straight like we do.
They follow the shape of the rocks.
On a hill, "straight" can be curved.
g
shortest path → curve


One Per Place
The Exclusion Yard
Unus locus, una avis
1 → 1
The chickens don't bunch up like sheep.
Each chicken wants its own little spot.
If one moves in, another steps away.
Two chickens won't stand in the same place.
When you squeeze them close, they push back.
1 → 1


The Warm Mud Patch
Entropy / The Arrow of Time
Lex Entropiae
S ↑
Ordo → chaos
ΔS ≥ 0
The pigs like warm mud.
When they wiggle and roll, everything gets mixed.
Clean straw becomes muddy straw.
Water splashes everywhere.
It's easy to make a mess.
It's hard to put it back.
S ↑

The Busy Buzzing Air

Gas Laws / Pressure from Motion

Bees never sit still.
They zoom and bump into everything.
When they bump the walls, they push.
Lots of bumps make lots of push.
Warm bees zoom faster.
Faster bees make more push.

Mika and the Moving Air

(Forces and Flight)

Mika spreads her wings wide.
She pushes the air down.
The air pushes her up.
When the wind blows faster, she flies higher.
She doesn't flap much.
She rides the moving air.